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NEW TAXA OF WESTERN ATLANTIC COLUMBELLIDAE (GASTROPODA, PROSOBRANCHIA)

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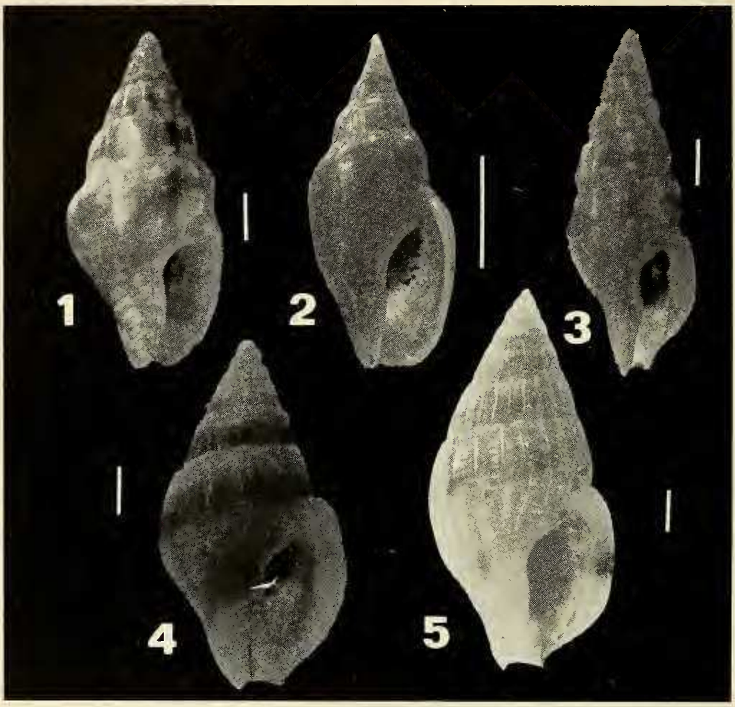
The Columbellidae is one of a number of prosobranch families whose classification is much in need of careful revision. The last monographic treatment of the family (Kobelt, 1897) was extensive, but was essentially a catalogue of species with no attempt to establish their possible interrelationships. In order to establish such relationships, a taxonomic revision of the Columbellidae of the western Atlantic has been undertaken as the present author's doctoral dissertation (Radwin, unpublished).

During the course of the above investigation, the columbellid components of the mollusk collections of the Academy of Natural Sciences of Philadelphia, the American Museum of Natural History, the Museum of Comparative Zoology, Harvard, and the United States National Museum have been examined. Considering the lack of attention that has been given in the past to the family in question, it is, perhaps, not too surprising that five new taxa have been uncovered. These include two new species, two new subgenera and one new genus.

Rhombinella new genus

Type-species: Buccinum laevigatum Linné, 1758 (Figs. 2, 9)

Shell moderately large (12–20 mm) and buccinoid, spire acute and moderately high, whorls strongly convex, and sutures impressed. Body whorl large, aperture broad, apertural lip usually unthickened and, rarely, weakly denticulate on its inner surface. Columella straight and smooth, weak anal groove present, and siphonal canal very short. Shell



FIGS. 1–5: 1. *Anachis* (*Costoanachis*) *fenneli,* shell. 2. *Rhombinella laevigata,* shell. 3. *Anachis* (*Suturoglypta*) *pretrii,* shell. 4. *Anachis* (*Parvanachis*) *rhodae,* shell. 5. *Anachis* (*Parvanachis*) *obesa,* shell.

surface smooth with a dull buff-colored periostracum. Shell straw-colored with axial red, brown, and white flammulations whose precise pattern varies greatly from one specimen to another.

The radula is typically stenoglossate with a 1–1–1 formula. The median teeth are flat, sub-rectangular plates, each of which is flanked by a pair of lateral teeth. The lateral teeth are heavy, sub-rectangular plates with three large cusps and five to seven smaller denticles appended to the most proximal of these.

Remarks: The type species of this monotypic genus, in many cases, has been assigned to *Nitidella* Swainson, 1840. There are numerous distinctions regarding both shell and radula which may be used to separate these two genera.

The aperture in *Nitidella nitida* (Fig. 7), the type species of *Nitidella,* is much narrower than that of *Rhombinella.* The apertural lip of *Nitidella* is thickened and denticulate, in contrast to the typically thin, non-denticulate apertural lip of *Rhombinella.* The sutures in *Nitidella* are very shallow imparting a flat-sided appearance to its rather low spire. Those of *Rhombinella,* on the other hand, are impressed, imparting a buccinoid appearance to its moderately high spire.

The radular distinctions here are even more striking than those of the shell features (see Figs. 8, 10). The lateral radular tooth of *Nitidella* comprises a sharp distal cusp; a broad, blunt medial cusp; and a long flat proximal plate. The lateral tooth of *Rhombinella,* in contrast, comprises a sharp distal cusp, a broad second cusp ending in a sharp point, a broad third cusp bearing five to seven sharp denticles, and a flat proximal plate which is shorter than that of *Nitidella.* The lateral teeth of both genera have a basal extension, bent into a plane at right angles to that of the cusps. In addition to the above, the body of the lateral tooth of *Rhombinella* is notably broader than that of *Nitidella.*

The only western Atlantic species assigned to *Rhombinella* is the type-species, *R. laevigata* (Linné). There is also a subspecies, *R. laevigata hendersonii* Dall, 1908, found on the southwestern coast of Cuba. It may be distinguished from the nominate subspecies by its higher, more acute spire; duller coloration; and the fact that the third cusp of its lateral radular tooth always bears five denticles, whereas, that of the nominate subspecies consistently bears seven denticles.

Anachis (Suturoglypta) new subgenus

Type-species: Columbella pretrii Duclos, 1846 (Fig. 3)

Shell small (4–8 mm), and fusiform. Spire high and acute, whorls generally almost flat-sided, sutures squarely incised. Body whorl moderately small (less than ½ total shell length), aperture narrow, apertural lip thickened and denticulate on its inner surface. Columella slightly to moderately bent and nondenticulate. Sculpture predominantly of axial ribs, distinctly raised and almost square in cross-section. Color generally white with brown flammules in many specimens. The radula is typically stenoglossate with a flat, sub-rectangular median plate; flanked by a pair of sigmoid, distally-bicuspid lateral teeth.

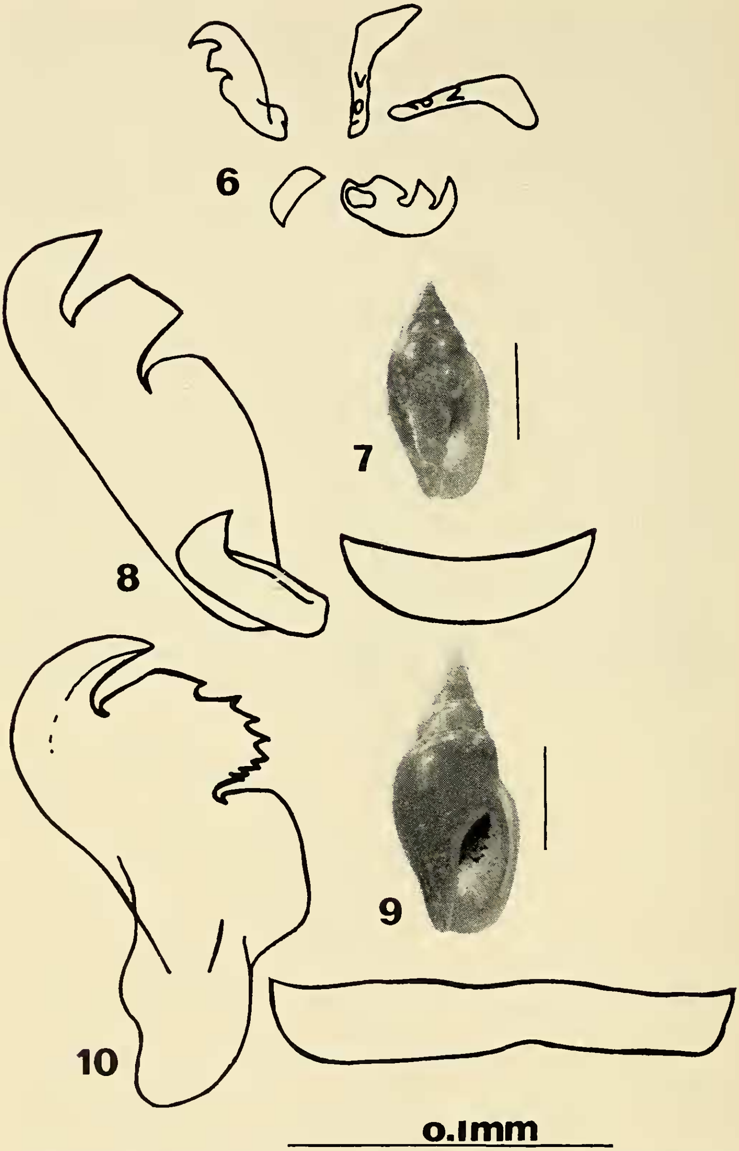
Remarks: This group shows remarkable variability at the species level with regard to the number and spacing of the axial ribs. The three species here assigned to *Anachis* (*Suturoglypta*): *A.* (*S.*) *albella* (C. B. Adams, 1850), *A.* (*S.*) *iontha* (Ravenel, 1861), and *A.* (*S.*) *pretrii* (Duclos, 1846) have been considered by many authors to be a single species. They are, nevertheless, distinct species distinguished by slight but consistent shell and radular differences.

The characters which are most diagnostic in distinguishing *Anachis* (*Suturoglypta*) from other *Anachis* groups are the distinctly fusiform shell; the strong, square-cut axial ribs; and the squarely incised sutures.

Anachis (Parvanachis) new subgenus

Type-species: Buccinum obesum C. B. Adams, 1845 (Fig. 5)

Shell small (5–10 mm) and obese. Spire moderately high and acute, whorls generally flat-sided with incised sutures. Length of body-whorl



Figs. 6–10: 6. *Anachis* (*Costoanachis*) *fenneli,* dissociated radula teeth. 7. *Nitidella nitida,* shell. 8. *Nitidella nitida,* radular dentition. 9. *Rhombinella laevigata,* shell. 10. *Rhombinella laevigata,* radular dentition. Note: Scale below figure 10 applies to all figures of radulae.

approximately equal in length to that of spire. Apertural lip markedly thickened and denticulate on its inner surface. Siphonal canal short to moderate in length and constricted, columella straight or slightly bent and denticulate. Shell sculpture generally consisting of prominent axial ribs, in most species crossed by spiral cords.

The radula has a 1–1–1 formula with a flat sub-rectangular median plate, flanked by a pair of sigmoid, tricuspid lateral teeth. The two most distal cusps of the lateral tooth are similar to those of most other columbellid genera. The proximal cusp, however, is strongly down-hooked; a feature which is characteristic of the subgenus.

Remarks: The new subgenus proposed here is intended to include those small, stout, *Anachis*-like columbellids with inflated body whorls and heavily thickened apertural lips. The shell proportions in this subgenus are considerably different from those in *Anachis* s. s. or *Costoanachis* as they impart a foreshortened or "dumpy" appearance to the shell. In addition, the strongly down-hooked proximal cusp of the lateral radular tooth serves to distinguish *Parvanachis* from *Costoanachis* Sacco, another *Anachis*-like group, to which *A. obesa* has been assigned by Gardner (1948, p. 229) and others. Other western Atlantic species of *Parvanachis* include *Anachis* (*Parvanachis*) *isabellei* (Orbigny, 1839), *A.* (*Parvanachis*) *ostreicola* (Sowerby, 1882), and *A.* (*Parvanachis*) *rhodae* n. sp.

Anachis (Parvanachis) rhodae new species (Fig. 4)

Holotype: Mus. Comp. Zool., Harvard, 261479, L: 7.7 mm, W: 3.2 mm

Shell moderately small (6–8 mm) and obese. Spire high (½ total shell length) and acute; whorls slightly convex, each "set-in" from the one below it, imparting a terraced appearance; sutures impressed. Body whorl large and inflated, apertural lip ventricose and strongly denticulate on its interior surface. Columella strongly denticulate and sharply bent with a small but heavy callus, siphonal canal short and sharply bent, slight anal groove present. Sculpture of low axial ribs and several obsolete spiral grooves on the anterior part of the body whorl. Color yellow-white with varying amounts of chestnut-brown blotches. Protoconch of one full, bulbous, translucent white whorl. The radula of this species is unknown. Despite the apparent freshness of most of the thirty-five shell specimens in the type lot, none of them contained any animal material.

Remarks: A hitherto unsuspected new species inhabiting the northern coast of Hispaniola, this species, named for the author's wife Rhoda, is known from only a single locality, Puerto Plata, Dominican Republic. Two lots from this locality were found in the collection of the Mollusk Department of the Museum of Comparative Zoology, Harvard. Fourteen paratypes (USNM 677645) have been deposited in the collection of the Division of Mollusks, U. S. National Museum.

The present species strongly suggests a link between *Strombina*

(*Sincola*) (Olsson and Harbison, 1953, pp. 230–31) and *Anachis* (*Parvanachis*). It lacks the typical hump and the heavily callused and emarginate aperture of *Strombina*, but otherwise might be considered quite close to *Sincola*. On the other hand, the overall shell form and the appearance of the apertural lip strongly resemble those of *A. obesa*, the type species of *Parvanachis*. The present placement of *A. rhodae* must remain provisional until the radula and the soft parts have been examined.

Anachis (Costoanachis) fenneli new species (Fig. 1)

Holotype: USNM 539122. L: 6.3 mm, W: 2.8 mm

Shell small (5–7 mm). Spire acute and slightly more than one-half total shell length, spire whorls slightly convex with weakly impressed sutures. Body whorl expanded, angular, and asymmetrical, the left side slightly more expanded than the right. Aperture broad, apertural lip denticulate on its inner surface, a distinct anal sinus present. Columella straight and weakly denticulate. Sculpture consisting of broad, strong axial ribs crossed by fine, shallow, spiral grooves. Yellowish-white ground color with numerous anastomosing brown blotches. Protoconch of almost three full, glossy-brown whorls. The radula (Fig. 6) is typically stenoglossate with a 1–1–1 formula. The median tooth is a flat, sub-rectangular plate; flanked by a pair of sigmoid, bicuspid lateral teeth. In details the laterals are very similar to most other *Coastonachis* species. The only notable difference is the smaller size of the entire lateral tooth.

Remarks: This new species is named in honor of Dr. William E. Fennel and is known from a single lot of about thirty-five specimens, all collected alive by Dr. D. M. Cochran near Nictheroy, State of Rio de Janeiro, Brazil in April, 1935. Its uniqueness is evident in its unusually large, angular body whorl, its prominent axial, and distinctive spiral sculpture, its color pattern, and its multiwhorl protoconch. In addition, some minor radular distinctions have been noted.

This is probably the "*Anachis sparsa* Reeve" treated by Marcus and Marcus (1962, p. 339, pl. 1, Fig. 2). Unfortunately, no specimens of this species were obtained from Dr. Marcus because of difficulties in the mailing of parcels from Brazil. Nevertheless, the figures of its shell and radula in the above-mentioned paper, plus the fact that the range of *A. sparsa* is not known to extend to South America, leaves little doubt that the Marcuses could not have had that species.

LITERATURE CITED

ADAMS, C. B. 1845. Spec. Nov. Conch. Jamaica Report. Synop. Proc. Bost. Soc. Nat. Hist. 2, pp. 1–17.

————. 1850. Notes on the synonymy of certain marine shells. Contrib. to Conch. 1(4), pp. 53–56.

DALL, W. H. 1908. A new West Indian *Nitidella*. Nautilus 22, pp. 31–32.

DUCLOS, M. 1846. (in Chenu) Illustrations Conchyliologiques. 4, pls. 1–27, Paris.

GARDNER, J. 1948. Mollusca from the Miocene and Lower Pliocene of Virginia and North Carolina. Part 2. Scaphopoda and Gastropoda. U. S. Geol. Surv. Prof. Paper # 199B, pp. 179–310, pls. 24–38.

KOBELT, W. 1897. (in) Martini and Chemnitz Conchylien-Cabinet. 3 (Id), 343 p., pls. 1–44, von Bauer and Raspe, Nuremberg.

LINNÉ, C. VON. Systema Naturae. . . . 10° edition 1, 824 p., Stockholm.

MARCUS, E. AND E. MARCUS. 1962. Studies on Columbellidae. Bol. Fac. Fil. Ciên. Letr. Univ. São Paulo # 261, Zoologia # 24, pp. 335–402, 8 pls.

OLSSON, A. AND H. HARBISON. 1953. Pliocene Mollusca of S. Florida. Acad. of Nat. Sci. Phila. Monogr. # 8, 457 pp., 65 pls.

ORBIGNY, A. 1839. Voyage dans l'Amerique Meridionale Atlas, livr. 44, pls. 61, Figs. 18–21, Paris.

RADWIN, G. 1968. A systematic revision of the family Columbellidae in the western Atlantic. Unpublished doctoral dissertation George Washington Univ. 255 p., 54 pls.

RAVENEL, E. 1861. Descriptions of new recent shells from the coast of South Carolina. Proc. Acad. Nat. Sci. Phila. pp. 41–42.

SOWERBY, G. B. 1882. Descriptions of new species of shells in the collection of Mr. J. Cosmo Melvill. Proc. Zool. Soc. Lond. pp. 116–121.

SWAINSON, W. 1840. A treatise of Malacology 419 p., Longman et al. London.